

WHAT IS CLAIMED IS:

1. A multi-ply laminate (I) having an asymmetric structure comprising an outer ply (b), and at least one inner ply (i) wherein melt flow rate as determined in accordance with DIN ISO 1133 at 190°C and 2.16 kg (MFR) of said (b) is at least 0.1 g/10 min., and wherein MFR of said (i) is greater than said MFR of said (b), said laminate characterized in that the weight per area of said (i) is at least 40% of the weight per area of said (I), said outer ply comprising a first polymeric resin and said inner ply comprising a second polymeric resin.
2. The multi-ply laminate of Claim 1 wherein MFR of said (b) is 0.1 to 3 g/10 min.
3. The multi-ply laminate of Claim 1 wherein MFR of said (b) is 0.5 to 2 g/10 min.
4. The multi-ply laminate of Claim 1 wherein MFR of said (i) is at least twice the MFR of said (b).
5. The multi-ply laminate of Claim 1 wherein MFR of said (i) is at least thrice the MFR of said (b).
6. The multi-ply laminate of Claim 1 wherein weight per area of said (i) is at least 60% of the weight per area of said (I).
7. The multi-ply laminate of Claim 1 wherein weight per area of said (i) is at least 70% of the weight per area of said (I).
8. The multi-ply laminate of Claim 1 wherein (b) has a thickness of 5 to 50 μm .
9. The multi-ply laminate of Claim 1 wherein (b) has a thickness of 10 to 30 μm .
10. The multi-ply laminate of Claim 1 wherein (b) has a thickness of 10 to 20 μm .
11. The multi-ply laminate of Claim 1 wherein structure consists of an outer ply (b) and at least one inner ply (i).

12. The multi-ply laminate of Claim 1 wherein said inner ply (i) includes two plies.

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5 13. The multi-ply laminate of Claim 1 wherein said first polymeric resin comprises at least one member selected from the group consisting of ethylene/vinyl acetate copolymer, ethylene/unsaturated ester copolymer, ethylene/unsaturated carboxylic acid copolymer, salt of ethylene/unsaturated carboxylic acid copolymer, low density polyethylene, high density polyethylene and copolymer of ethylene and α -olefin having at least 3 carbon atoms.

10 14. The multi-ply laminate of Claim 13 wherein said unsaturated ester comprises at least one member selected from the group consisting of butyl acrylate and ethyl acrylate.

15 15. The multi-ply laminate of Claim 13 wherein α -olefin of said copolymer of ethylene comprises at least one member selected from the group consisting of butene, hexene, octene and 4-methyl-1-pentene.

16. The multi-ply laminate of Claim 15 wherein copolymer comprises the product of a reaction catalyzed by metallocene.

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20 17. The multi-ply laminate of Claim 1 wherein said second polymeric resin comprises at least one member selected from the group consisting of ethylene/vinyl acetate copolymer, ethylene/unsaturated ester copolymer, ethylene/unsaturated carboxylic acid copolymer, salt of ethylene/unsaturated carboxylic acid copolymer, low density polyethylene, high density polyethylene and copolymer of ethylene and α -olefin having at least 3 carbon atoms.

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25 18. The multi-ply laminate of Claim 1 wherein said first polymeric resin comprises at least one member selected from the group consisting of ethylene/vinyl acetate copolymer wherein content of vinyl acetate is at most 20% relative to the weight of said copolymer, ethylene/unsaturated carboxylic acid copolymer wherein content of
30 carboxylic acid is at most 8% relative to the weight of said copolymer, salt

of ethylene/unsaturated carboxylic acid copolymer having a content of carboxylic acid of at most 10% relative to the weight of said copolymer, low density polyethylene having a density of 0.91 to 0.935 g/cm³, and copolymer of ethylene and α -olefin having density of 0.90 to 0.94 g/cm³.

5 19. The multi-ply laminate of Claim 1 wherein said second polymeric resin comprises at least one member selected from the group consisting of ethylene/vinyl acetate copolymer wherein content of vinyl acetate is at most 20% relative to the weight of said copolymer, ethylene/unsaturated carboxylic acid copolymer wherein content of
10 carboxylic acid is at most 8% relative to the weight of said copolymer, salt of ethylene/unsaturated carboxylic acid copolymer having a content of carboxylic acid of at most 10% relative to the weight of said copolymer, low density polyethylene having a density of 0.91 to 0.935 g/cm³, and copolymer of ethylene and α -olefin having density of 0.90 to 0.94 g/cm³.

15 20. The multi-ply laminate of Claim 1 wherein said (b) comprises a copolymer of ethylene and α -olefin.

20 21. The multi-ply laminate of Claim 20 wherein said copolymer further comprises at least one member selected from the group consisting of low density polyethylene, and copolymer of ethylene and vinyl acetate, said member being present in an amount of up to 50% relative to the total weight of said ply (b).

22. The multi-ply laminate of Claim 21 wherein said copolymer of ethylene and α -olefin is characterized in that it is a product of a reaction catalyzed by metallocene, and in that it has a crystalline melting point of at most 110° C, and in that its ratio of weight average molecular weight to number average molecular weight is at most 3.

23. The multi-ply laminate of Claim 1 wherein a least one of said (i) and said (b) include anti-blocking additives and/or dyes.

24. The multi-ply laminate of Claim 1 wherein said (b) comprises about 0.1 to 2 % relative to the weight of said (b) of solid

inorganic particles selected from the group consisting of silicon oxide, calcium carbonate, magnesium silicate, aluminum silicate, calcium phosphate and talc.

25. A composite film comprising the laminate of Claim 1.

5 26. The composite film of Claim 25 further comprising a substrate selected from the group consisting of metal, cardboard, paper, paperboard, textile, non-woven fabric, woven fabric, plastic and composites thereof, said plastic being other than said first polymer resin and said second polymer resin.

10 27. The composite film of Claim 26 wherein said substrate is at least one member selected from the group consisting of paper, aluminum, cellulose, polypropylene, polyalkylene terephthalate, polyamide, polycarbonate, polyvinyl alcohol, EVOH, polystyrene.

15 28. The composite film of Claim 26 wherein substrate is in oriented form.

29. The composite film of Claim 26 wherein substrate is in unoriented form.

20 30. A composite film comprising the laminate of Claim 1 as heat sealable layer with said ply (b) being one outer layer of said laminate.

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